

Morrison Planetarium

Sky Shows

Mr. Halley's Great, Flaming Space-Thing prepares us for the once-in-a-lifetime return of Halley's Comet. In April of 1986 an international fleet of space craft will hurtle into space to study the visit of this extraterrestrial. Learn where to look, what to expect and what this visit will mean to science. Mr. Halley's Great, Flaming Space-Thing can be seen in Morrison Planetarium through September 22.

The Planetarium will be closed September 23 through September 26.

Giants of the Sun will open September 27 and feature the giants of our solar system. Jupiter, Saturn, Uranus, and Neptune have long made spectacular viewing for astronomers, but these gaseous colossi with their myriad moons and delicate rings are now revealing new secrets. Two have already been visited by space probes from Earth, and even now while Voyager 2 is hurtling toward a meeting with Uranus you can learn what new answers - and mysteries - may soon be uncovered.

Beginning September 1 the schedule of sky shows will be weekdays at 2:00 p.m. and weekends and holidays at 1:00, 2:00, 3:00 and 4:00 p.m.

Exploring the Skies of the Season gives everyone a chance to see the September skies over San Francisco no matter what the weather. Learn what's up in the heavens over the City Saturdays, Sundays and holidays at 12 noon.

Laserium

Laserium shows offer high-tech entertainment using a powerful 1-watt krypton laser and Morrison Planetarium's newly renovated stereo sound system.

Crystal Odyssey is a program of classical music by Bach, Saint-Saens, Grieg, Mussorgsky and others against a backdrop of lyrical weaving lasers. Crystal Odyssey is presented on Saturdays and Sundays at 5:00 p.m.; tickets are \$4 for adults and \$3 for children 6-12 and seniors.

Laser Rock Platinum rocks the planetarium with the upbeat music of the Rolling Stones, Rush, Journey, Led Zeppelin and others every Friday through Sunday evening at 7:30 p.m.

Dark Side of the Moon lights up the planetarium with the music of Pink Floyd on Friday, Saturday and Sunday evenings at 9:00 with late shows on Friday and Saturday at 10:30 p.m.

Laser Space, featuring the New Age space music by Phillip Glass, Iasos, Peter Michael Hamel and Michael Stearns, can be seen at 9:00 p.m. every Thursday.

You can bring your own FM Walkman type radio to all Laserium concerts and choose your own listening volume.

Tickets for Laser Rock Platinum, Dark Side of the Moon and Laser Space are \$5 for adults and \$3 for children 6-12 and seniors. Children under 6 are not admitted to Laserium shows. There are discount prices for groups of ten or more. Members are reminded that their complimentary planetarium passes are not valid for Laserium shows. Tickets are available at the planetarium one-half hour before showtime.

Show titles are subject to change without notice.

For information on Laserium call 221-0168.

Inside the Academy

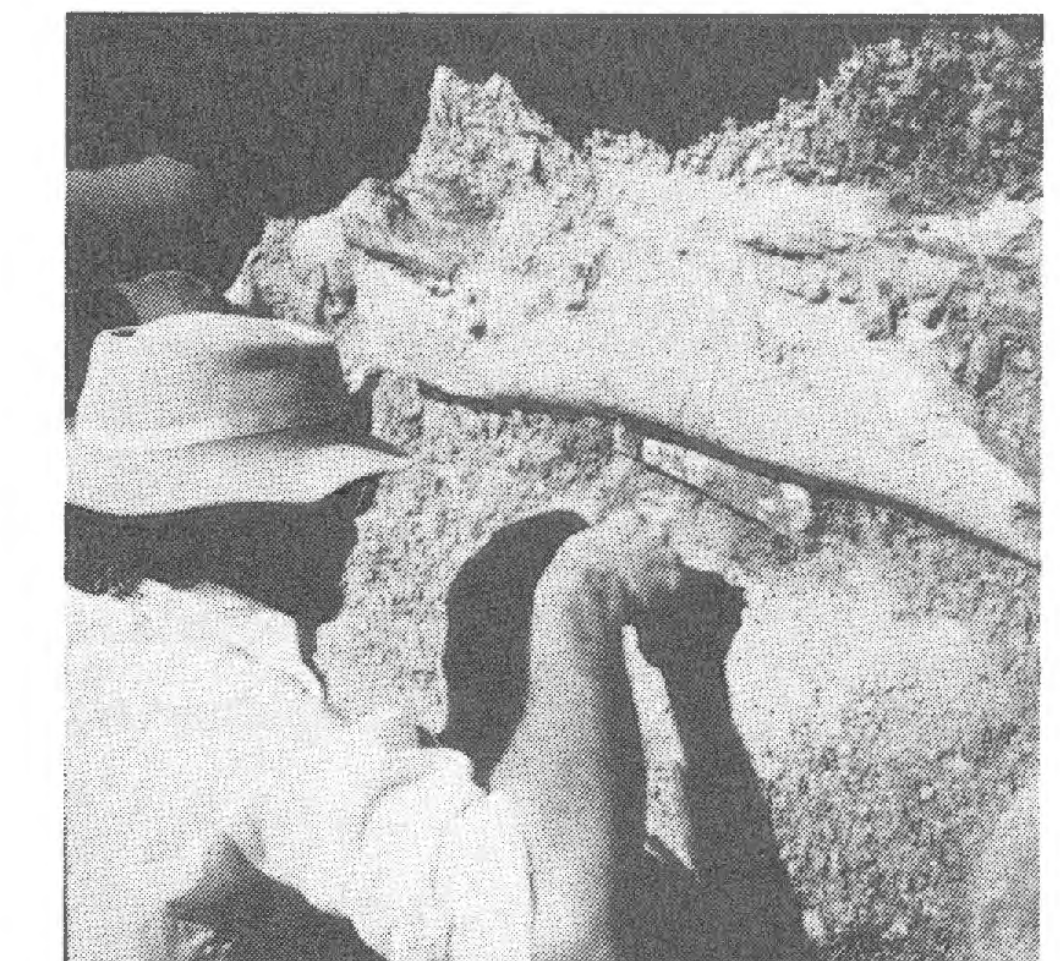
Academy scientists took advantage of the long days of summer to pursue their work in the field. Using both Academy funds and special grants, staff members observed and gathered specimens for their research and for the museum's growing collections and shared their findings with colleagues around the world.

The **Anthropology** Department sent Chuck Cecil to help excavate Pirincay, an early formative site in Ecuador. **Aquatic Biology** benefited from the trained eye and quick hands of aquarist Bruce Hiler who collected reptiles and amphibians in Arizona for display in the aquarium. The **Botany** Department was very active this summer with Mona Bourell collecting in southern Africa and Brazil; Frank Almeda and George Lindsay observing the flora in South Africa and Namibia; and Bruce Bartholomew hosting botanists from the People's Republic of China on a floral survey of the western United States and Mexico. The **Entomology** Department expanded on their vast collection of American specimens with Wojciech Pulawski collecting wasps in the Southwest, Paul Arnaud studying flies in Arizona and David Kavanaugh continuing his work on ground beetles in Alaska.

In the **Geology** Department Jean DeMouthe, Peter Rodda, and Tony Summers journeyed to Montana with Lowell Dingus, staff paleontologist, to dig for dinosaurs. Their trip was a resounding success (see "Dinosaur Dig" below for details). The **Herpetology** Department was quiet this summer with Bob Drewes on sabbatical at Oxford University, Al Leviton at the AAAS Meetings in Montana, Jens Vindum studying the fauna of Kenya and Larry Wishmeyer collecting in New Caledonia. The **Ichthyology** Department sent Eric Anderson, Bill Eschmeyer and Lynne Parenti to the American Society of Ichthyology and Herpetology Meetings in Tennessee where Dr. Parenti was elected to the Board of Governors. She was also invited to present a paper at the Fifth Congress of

European Ichthyologists in Stockholm. Tomio Iwamoto attended the International Ichthyology Meetings in Japan. The **Invertebrate Zoology** department covered the globe this summer. Daphne Fautin presented a paper at the 5th International Coral Reef Congress in Tahiti and taught a graduate course on Vancouver Island, Canada. Michael Ghiselin taught evolutionary biology as a visiting professor at University of Pavia in Italy; Terry Gosliner pursued his research on nudibranchs in Baja California; and Bob Van Syoc collected in Tonga.

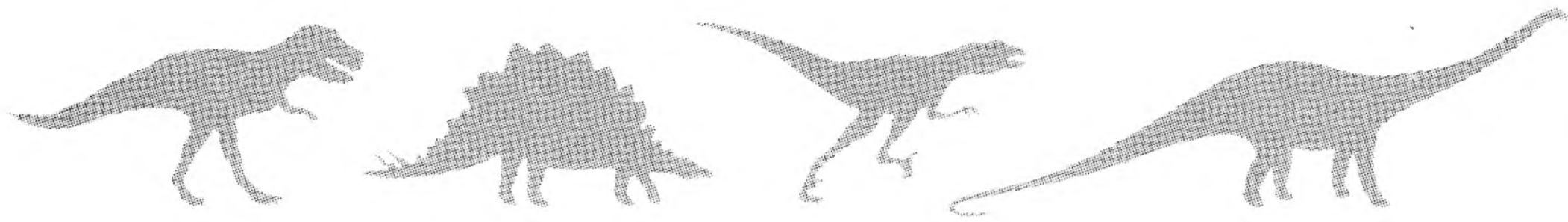
In **Mammalogy and Ornithology** Steve Bailey continued his work directing research and management of the endangered California Least Tern Project and Luis Baptista finished work on his nine year study of white crown sparrows on Tioga Pass and began a new project in Alberta, Canada.



Dinosaur dig is a smashing success! Led by staff paleontologist Dr. Lowell Dingus, members of the geology, invertebrate zoology and exhibits departments spent a month in the 110 degree heat of Montana searching for evidence of early life on earth. Their patience paid off on a grand scale with the discovery of several large intact bones from Triceratops and other, as yet unidentified, dinosaurs. These bones along with a nearly complete turtle shell were estimated by Dr. Dingus to be about 65 to 70 million years old. The team also collected large numbers of smaller dinosaur bones and teeth, and many scales from extinct fish. Phil Fraley of the exhibits department who assisted in the hunt will restore the finds and explain the delicate restoration work in McBean-Peterson Hall during September.

S

pecial Events



NIGHT OF THE DINOSAURS

A black tie gala of dining, dancing and entertainment will be held at the Natural History Museum on October 24. The museum will sparkle with the music of jazz pianist Mark Levine, the steel drums of The Harmonics, the Home Savings of America Band under the direction of Dick Crest (provided through the courtesy of Home Savings of America) and the lively rock sounds of Hearts on Fire who will perform against a backdrop of classic dinosaur movies. Party goers, who can dress as their favorite dinosaur if they wish, can enjoy complimentary wine and champagne at the Original Fern Bar, Ice Age cocktails, and a Mammoth Buffet while they stroll among the visitors from the past, the dinosaurs of DinoFest '85.

Tickets begin at \$100 per person. Proceeds from this even will be used to buy a herd of *Deinonychus*, a fearsome predator that lived 140 million years ago, for the museum's new Hall of Life Through Time.

Mr. John R. Grey is the General Chairman for Night of the Dinosaurs; Mrs. Richard H. Peterson and Mrs. Harriet Meyer Quarre are co-chairs for the Dinner Committee. For more information and an invitation call the Dinosaur Office at (415) 221-5100.



T

raditional Arts

On Saturday afternoons at 1:00 visitors to the Natural History Museum and Aquarium can enjoy and interact with some of the diverse ethnic groups of the Bay Area. Each week one of these groups shares its cultural heritage with a presentation of their traditional arts. The Traditional Arts Program is funded by a grant from the Paul L. and Phyllis Wattis Foundation.

September 7 - Storyteller Nancy Schimmel's presentation will focus on family folklore - the unique stories and oral traditions that are handed down within a particular family. Ms. Schimmel's program includes stories belonging to her own family.



Maj-Britt Mobrand-Robinson weaving

September 14 - Maj-Britt Mobrand-Robinson (a native of Stockholm) demonstrates Swedish weaving techniques such as *bobusvav* (double weave pick up) on a *glimakra* loom.

September 21 - Dick Holdstock (from Kent, England) sings the folk songs of his childhood, accompanied by Allan MacLeod singing a medley of tunes.

September 28 - Members of The Friends of Calligraphy will explain how our modern alphabet developed and, using quills, reeds, pens and brushes, demonstrate several Western alphabets including Roman, Gothic, and Irish uncials. Come and have your name written in the lettering of your choice!

S

pecial Exhibits

DinoFest '85 continues to delight visitors of all ages. The towering 72-foot *Mamenchisaurus* from China will resume its journey in September and be replaced by a 15-foot realistic sculpture of an *Allosaurus* by artist Stephen Czerkas. (This addition, plus many of the exhibits in DinoFest '85, are made possible by a generous grant from the people at Chevron.) The new *Allosaurus* will stand near its skeletal counterpart as an example of how scientists using bones speculate how each dinosaur looked. The 20th Century Dinosaurs by Jim Gary add a touch of whimsy to science by using car parts to reconstruct a *Stegosaurus*, *Dimetrodon*, and other creatures from the past. A *Tyrannosaurus rex* skull, a dinosaur egg, mini-monsters by Art Grant, paintings and sculptures by renowned dinosaur artists, and a delightful animated film "Dinosaur" offer a total look at an age that ended 35 million years ago. Dino Fest '85 continues through November 3.

California Gold, the dazzling display of gold on loan from the State of California, can now be seen in the Gem Room. This small but valuable part of the state mineral collection has not been on public display since it was moved from the Ferry Building to Mariposa County in 1983. From the football-sized 12-pound mass of pure crystalline gold to the delicate pieces that look like fine gold wire embedded in rock, these are the pieces that sparked the rush to California. **California Gold**, funded by a grant from Homestake Mining of San Francisco, will be on display through the end of the year.

Ban Chiang offers the Western world its first look at the amazing archaeological finds from Thailand that caused anthropologists to reevaluate their entire timetable for the development of the Bronze Age in the East. Burial sites, weapons, tools and utensils dating from the 3rd millenium reveal a previously unknown early culture. Ban Chiang can be seen through October 2 in Lovell-White Hall.

Under The Canopy is a photographic journey through the rainforests of the world, particularly the *Zona Protectora* of Costa Rica. Large color photographs capture the rich diversity of this unique, and rapidly vanishing, habitat. Under The Canopy is offered in conjunction with the Tropical Rainforest Symposium and can be seen September 27 through December in Cowell Gallery.

I

nside the Academy

Summer hours will continue through September 2 with the museum remaining open until 7:00 p.m. Beginning September 3 we will resume our regular schedule of 10:00 a.m. to 5:00 p.m. daily.

Junior Academy will enroll students for Fall classes on Saturday, September 21 from 10:00 a.m. to 1:00 p.m. in Morrison Auditorium. For information call Junior Academy at (415) 668-7376.

Things were humming this summer in Steinhart Aquarium where John McCosker and John Hewitt joined Marin County's noise control expert and acoustical engineers in a search for the mysterious vibrating hum in Richardson Bay. For the past several summers houseboat owners in Sausalito have heard a loud hum at night. Early speculations ran the gamut from generators to extra terrestrials as possible sources of the annoying sound. Tom Neisen, an Academy Fellow, first suggested to McCosker that a fish might be the culprit. A few trawls in shallow water at the sound "hot spots" netted ten *Porichthys notatus*, or plainfin midshipmen, a mud dwelling species which produces a sound made by a vibrating organ drumming against the fish's air sack. Perhaps this "song" is used to attract females; sound is often used in nature when visibility is a problem. Could there be enough singing midshipmen to keep people awake? "It's possible," say our scientists. "Think of the racket produced by an amorous chorus of frogs."

Special Lectures

Tropical Rainforests Symposium

A symposium addressing the rapid destruction of this irreplaceable resource, the tropical rainforests, will be presented by the California Academy of Sciences on September 27 and 28 in Morrison Auditorium. This two day program will feature authorities on rainforests from throughout the world. Details of the program and its speakers were mailed to all members early in June. For information call the Special Programs Office at (415) 221-5100, ext. 211.



Registration

Seating is limited, so please register at your earliest convenience. Confirmation of your registration will be mailed to you.

Name _____

Address _____

City _____ State _____

Zip Code _____ Daytime Phone _____

Please send me _____ tickets at

☐ \$60.00 each (Members of the California Academy of Sciences)

☐ \$75.00 each (Non-members)

Amount Enclosed _____

Please make all checks payable to the California Academy of Sciences and mail with the above form to:

Rainforest Symposium
California Academy of Sciences
Golden Gate Park
San Francisco, CA 94118

Lessons From a Primitive People: The Waorani Indians of the Ecuadorian Amazon Rainforest

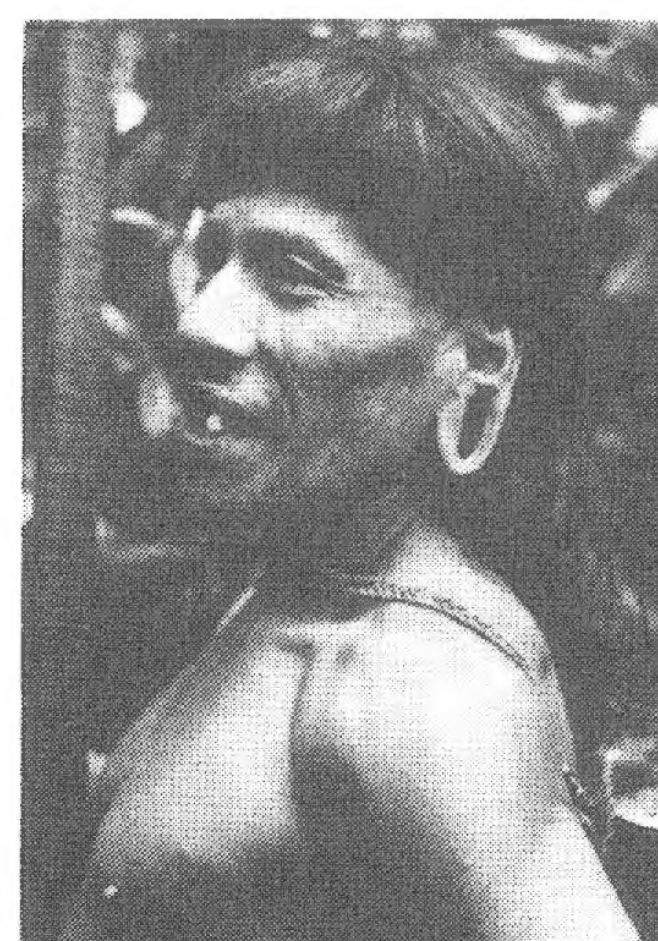
Dr. James W. Larrick

Thursday, September 19

Morrison Auditorium

8:00 p.m.

Free



Waorani man

Inhabiting the largely unexplored headwaters of the upper Amazon basin in Eastern Ecuador, 600 Amer-indians, the Waorani, live an isolated existence from the world. Until recently the fierce reputation of the Waonari as savage killers of all intruders into their territory

prevented any outside contact. Now missionaries, oil exploration crews and highland colonists have forced drastic changes in their special niche. Since 1975 a variety of biomedical and ethnocultural studies have been carried out on these people, whose unique way of life is rapidly vanishing. Dr. Larrick who has degrees in medicine and biochemistry, will describe the cultural and biomedical strategies which the Waorani developed to survive in the rainforest environment and the consequences of the changes which confront them.

Adult Education and Travel

The Adult Education office offers a variety of classes and study tours that probe fascinating topics of natural history; for more information call (415) 221-4716.

Channel Islands for Scuba Divers

Lecture: November 20 7-9 p.m.

Trip: December 3 - 6

Cost: \$390 members, \$450 non-members, excluding transportation to Santa Barbara

Marine biologist Brian Gibeson will lead this exploration of the crystalline waters off Santa

Barbara Island aboard the new 80' Vision. Certified divers can reserve a place by sending a \$50 non-refundable deposit; balance due by October 15.

Trees of California

September 25 - November 13 (8 Wednesdays)

7:00 - 9:00 p.m.

Dr. Glenn Keator, Botanist

Cost: \$65 members, \$75 non-members

A course with three optional trips to learn about the more than 100 native trees in our state.

Freshwater Aquariums

September 27 - October 25 (5 Fridays)

7:00 - 9:00 p.m.

Jonathan Mee, Aquatic Biologist

Cost: \$30 members, \$40 non-members

Learn to set up and maintain a home aquarium from a professional at the Steinhart.

Make Your Own Telescope

October 1 - November 19 (8 Tuesdays)

7:00 - 9:00 p.m.

John Dobson

Cost: \$30 members, \$40 non-members

(materials will vary from \$185 to \$385 depending on size of scope)

With guidance from John Dobson even beginners can make their own first class astronomical telescope.

Riding the Curvatures of Spacetime

October 3 - 31 (5 Thursdays)

7:00 - 9:00 p.m.

Steve Bryson, Mathematical physicist

Cost: \$30 members, \$40 non-members

A look at the revolutionary new concept in physics which replaces the concept of forces with the idea of things moving in curved spaces.

Academy Expeditions

Plan your travels with the California Academy of Sciences. There are diverse destinations with adventure and education for every traveler. For information call the Academy Travel Office at (415) 221-5100.

GALAPAGOS ISLANDS

October 5 - 22

\$1200 plus air

MEXICO SOUTH: Land of the Maya and Zapotecs

November 1 - 17

\$1765 land plus \$439 air

RED SEA AND ETERNAL SINAI

December 17 - January 4

\$3960 cruise and land plus \$1200 air

A SNEAK PREVIEW OF ACADEMY EXPEDITIONS FOR 1986

THE NATURAL HISTORY OF COSTA RICA

February 5 - 19

HALLEY'S COMET TOUR TO NAMIBIA AND BOTSWANA

April 4 - 21

ARIZONA IN THE SPRING: Sonoran Desert and the Chiricahuas

April 12 - 20

WILDERNESS GRAND CANYON

April - dates to be determined

NATURAL HISTORY OF THE MEDITERRANEAN

May 24 - June 8

KENYA ADVENTURE SAFARI

June 4 - 18

GRAND CANYON BY DORIES

July - dates to be determined

AUSTRALIA AND THE GREAT BARRIER REEF

August 17 - September 4

ALASKAN ODYSSEY

August 30 - September 11

CHESAPEAKE BAY CRUISE AND THE SMITHSONIAN

September - dates to be determined

EL TAJIN, CENTRAL MEXICO AND OAXACA

October - dates to be determined

THE WILDLIFE OF INDIA AND NEPAL

November - dates to be determined

September Members' Meeting

Dates & Times

Matinee, 2:00 p.m., Wednesday,
September 11

Evenings, 8:00 p.m., Wednesday and
Thursday, September 11 and 12

Place

Morrison Auditorium

Speaker

David Cavagnaro

Subject

The Kuna Indians of San Blas: A native
people's fight to save their rainforest



*Kuna woman
making a mola*

The Kuna Indians of Panama are best known to the traveler for their brilliantly colored *molas* which the women applique to wear as part of their daily dress. Far less known to the outside world is the equally rich and beautiful cultural fabric of these wise and gentle people. Nearly 32,000 in number, most Kuna today live in 50 small offshore island villages along the Gulf of San Blas. Their shelter, agriculture, healing systems, and spiritual life are intricately tied to the vast expanse of humid forest that stretches from coastal farms to the crest of the continental divide.

Today the precious Kuna rainforest, like most in the tropical world, is threatened by the encroachment of outside colonization and cattle ranching. To curb this threat, the well educated Kuna have initiated the establishment of a huge forest reserve at Nusigandi on the continental divide, the only such

preservation project in tropical America begun and managed entirely by an indigenous people.

In February of this year David Cavagnaro turned his searching photographer's eye southward for a rare look at the heart of the Kuna land and culture in the hope that national attention might assist the success of this project so vital to both Kuna and rainforest survival.

Your membership card admits you through the Wattis Hall or Cowell Hall entrances for the afternoon program and through the Cowell Hall entrance for the evening meetings. Please be prepared to show your membership card at the auditorium door for the matinee presentation since the museum is open to the public at that time.

SNEAK PREVIEW: October 9 and 10, photographer John Pearson will present "Calligraphy of Nature."

The Month At A Glance

SEPTEMBER

- 3 Regular hours resume at Natural History Museum - 10 a.m. to 5 p.m. daily
- 7 Traditional Arts - **Family folklore**
- 11 Members' Meeting
- 12 Members' Meeting
- 14 Traditional Arts - **Swedish weaving**
- 19 Lecture - **Woorani Indians**
- 21 Traditional Arts - **English folk songs**
- 21 Junior Academy enrollment
- 22 Last day of **Mr. Halley's Great, Flaming Space-Thing**
- 27 **Giants of the Sun** opens in planetarium
- 27 **Under The Canopy** opens
- 27-28 **Tropical Rainforest Symposium**
- 28 Traditional Arts - **Calligraphy**

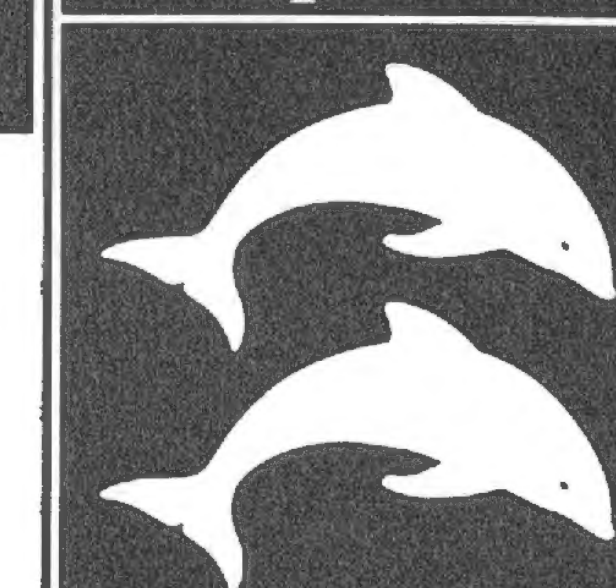
*Golden Gate Park
San Francisco, California 94118-9961
(415) 221-5100*

*Open every day of the year
from 10 until 5*



California Academy of Sciences

Natural History
Museum
& Aquarium



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NEWSLETTER

September 1985

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